FOREST MANAGEMENT PLAN
&
COVER TYPE MAP

For

Westport
Dulles District
Loudoun County, Virginia

February 15, 2005

Prepared for:

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Introduction

Zimar and Associates, Inc. (Z&A) was contracted to prepare this document in order to meet the requirements of The Loudoun County Facility Standards Manual Chapter 7.000 Environmental Design Standards Sub-Chapter 7.350 Forest Management Plan as required by the Loudoun County Zoning Ordinance. This section outlines the requirements for a Forest Management Plan (FMP) for sites going through the rezoning process.

Site Location

This, approximately, 732 acre area of study is located in Loudoun County and lies between John Mosby Highway (Rt. 50) and Braddock Road, just west of Goshen Road.

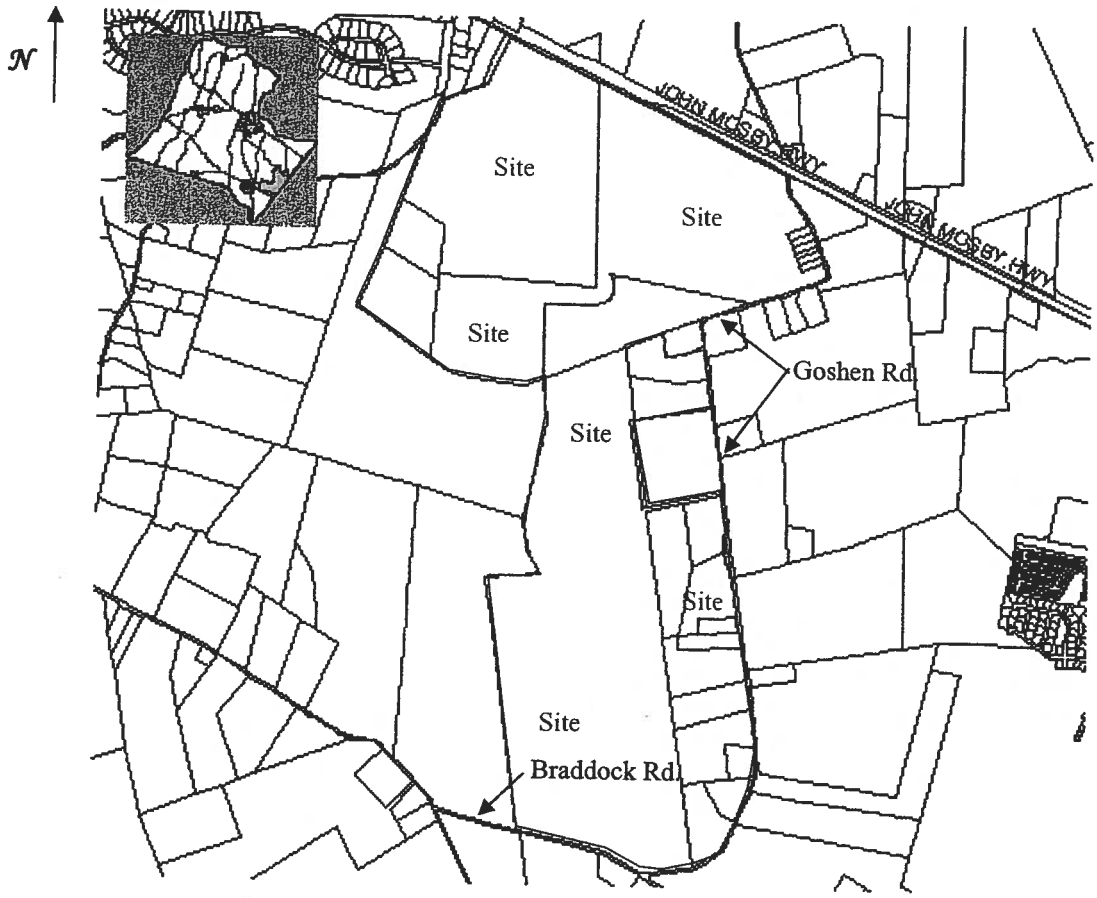

Figure 1: Vicinity Map

Loudoun County Office of Mapping and Geographic Information – February 2005

Procedures

Z&A prepared a Forest Cover Type Map for the identified property in February of 2005. The methods used to prepare this map are as follows:

- Cover type lines were determined in the field using aerial photographs and traditional forestry methods for type mapping. Existing tree lines were determined using Loudoun County GIS maps, aerial photos, and existing condition maps provided by Urban Engineering, Inc. Existing features were field verified.
- Species composition was determined by identifying the predominant overstory species.
- Age classes were determined by estimating tree age from increment bore samples from a typical tree in a cover type and determining diameter ranges from tree measurements sample plots.
- Stand densities in young mature and mature forest stands were determined using randomly spaced basal area plots measured with a basal area factor (BAF) 10 prism. Trees tallied in basal area plots were a minimum of 6" DBH, alive and healthy, and of a species that would be managed for timber production. Densities of immature stands and understory regeneration were determined by counting the number of stems in randomly spaced $1/10^{th}$ (37.2' radius) acre plots. These figures were used to determine per acre densities. Regeneration tallies are based on the number of stems per acre of desirable hardwood overstory species.
- Topography was determined from Loudoun County Office of Mapping and Geographic Information maps as well as maps provided by Urban Engineering and Associates, Inc.
- Health, vigor, and quality were determined by growth rate, presence of diseases or insects, and tree form, size, and structure.

Observations

This section contains the descriptions of individual stands and contains recommendations specific to each stand. Please refer to the Forest Cover Type Map at the end of this report to identify location and extent of specific stands.

The area of study consists of both forested and non-forested open areas. Forested areas consist of mature upland and mixed hardwoods transitioning to bottomland hardwoods along drainages. Transitional forests containing primarily immature to young mature early successional pioneer tree species such as eastern red cedar and Virginia pine can also be found within the area of study. Open areas consist of land that is currently being used for sod production as well as abandoned agricultural fields, pasture and paddock areas, and lawn area around existing homesites. The majority of these open areas have been affected by previous intensive agricultural use.

Overall, there are no truly exceptional forested stands on this site. The best stands consist of mature upland hardwoods and are located within Cover Type 1.

Cover Type # 1

GENERAL DESCRIPTION:	Upland hardwoods.
SPECIES COMPOSITION:	Overstory contains white oak *(Quercus alba)*, southern red oak *(Quercus falcata)*, hickory *(Carya spp.)*, scarlet oak (*Quercus coccinea)*, white ash *(Fraxinus Americana)*, and widely scattered interspersed Virginia pine *(Pinus virginiana)*. The understory contains mixed oak and hickory, blackhaw, *(Viburnum prunifolium)*, red maple *(Acer rubrum)*, flowering dogwood *(Cornus florida)*, blackgum *(Nyssa sylvatica)*, white ash, black cherry *(Prunus serotina)*, and eastern redcedar *(Juniperus virginiana)*.
ACREAGE:	131.54 acres.
AGE/SIZE CLASS:	Uneven-aged, mature (10"-20" DBH). There are some widely scattered larger trees present, primarily oaks, up to 30" DBH.
AGE:	50-80 years.
DENSITY:	Well stocked (70 sq. ft. BA per acre).
GROWTH RATE:	Slow.
QUALITY:	Fair-good.
REGENERATION:	Desirable hardwood overstory species regeneration is present in moderate numbers (200 stems per acre). There is evidence of deer browse in the understory.
INSECTS / DISEASE:	None.
# TREES 6" – 13" / ACRE:	110.
# TREES > 14" / ACRE:	50.
SOILS:	Kelly silt loam, Kelly-Sycoline complex, Albano silt loam, Elbert silty clay loam, Sudly-Oatlands complex, Oatlands gravelly silt loam, Leedsville cobbly silt loam, Penn silt loam, Nestoria gravelly silt loam, Haymarket and Jackland soils, Dulles silt loam.
TOPOGRAPHY:	Level to gently sloping.

ASPECT: Aspect varies across this Cover Type.

STAND HISTORY: Previously used for agriculture and grazing.

Cover Type # 2

GENERAL DESCRIPTION: Mixed hardwoods.

SPECIES COMPOSITION: Overstory contains white oak, white ash, pin oak *(Quercus palustris)*, hickory, red maple, and black cherry. The understory contains blackhaw, red maple, eastern redcedar, black cherry, hickory, blackgum, slippery elm *(Ulmus rubra)*, flowering dogwood, and spicebush *(Lindera benzoin)*. Patches of Japanese honeysuckle *(Lonicera japonica)*, wild rose *(Rosa multiflora)*, and greenbrier *(Smilax rotundifolia)* can also be found in the understory.

ACREAGE: 43.70 acres.

AGE/SIZE CLASS: Uneven-aged, young mature-mature (6"-14" DBH) with some scattered larger trees, primarily oaks, up to 26" DBH occurring primarily in wetter areas.

AGE: 35-50 years.

DENSITY: Moderately stocked (60 sq. ft. BA per acre).

GROWTH RATE: Slow-moderate.

QUALITY: Fair.

REGENERATION: Desirable hardwood overstory species regeneration is sparse (80 stems per acre) due to heavy deer browse, canopy closure, and competition from less desirable vegetation.

INSECTS / DISEASE: None.

TREES 6" – 13" / ACRE: 110.

TREES > 14" / ACRE: 20.

SOILS: Nestoria gravelly silt loam, Penn silt loam, Sycoline-Catlett complex, Manassas silt loam, Albano silt loam.

TOPOGRAPHY:	Level.
ASPECT:	Aspect varies across this Cover Type.
STAND HISTORY:	Previously used for agriculture and grazing.

Cover Type # 3

GENERAL DESCRIPTION:	Bottomland hardwoods.
SPECIES COMPOSITION:	Overstory contains red maple, American sycamore *(Platanus occidentalis)*, yellow poplar *(Liriodendron tulipifera)*, pin oak, green ash *(Fraxinus pennsylvanica)*, and southern red oak. The understory contains red maple, eastern redcedar, slippery elm, and spicebush. There is a significant amount of herbaceous ground cover throughout this Cover Type as well as patches of Japanese honeysuckle, wild rose, and greenbrier.
ACREAGE:	13.75 acres.
AGE/SIZE CLASS:	Uneven-aged, young mature to mature (10"-20" DBH) with some larger trees present, primarily sycamore, up to 30".
AGE:	35-60 years.
DENSITY:	Moderately stocked (50 sq. ft. BA per acre).
GROWTH RATE:	Moderate.
QUALITY:	Fair.
REGENERATION:	Desirable hardwood overstory species regeneration is sparse (60 stems per acre) due to wet soil conditions, heavy deer browse, and competition from less desirable vegetation and heavy ground cover.
INSECTS / DISEASE:	None.
# TREES 6" – 13" / ACRE:	70.
# TREES > 14" / ACRE:	30.

SOILS:	Bowmansville silt loam, Nestoria gravelly silt loam, Albano silt loam.
TOPOGRAPHY:	Level to moderately sloping.
ASPECT:	Aspect varies across this Cover Type.
STAND HISTORY:	Previously used for agriculture and grazing.

Cover Type # 4

GENERAL DESCRIPTION:	Eastern redcedar and Virginia pine.
SPECIES COMPOSITION:	Overstory contains eastern redcedar and Virginia pine. The understory contains red maple, eastern redcedar, white ash, and wild rose.
ACREAGE:	39.50 acres.
AGE/SIZE CLASS:	Even-aged, young mature (6"-12" DBH).
AGE:	15-35 years.
DENSITY:	Medium stocking for pine (100 sq. ft. BA per acre).
GROWTH RATE:	Moderate.
QUALITY:	Poor.
REGENERATION:	Desirable hardwood overstory species regeneration is very sparse (40 stems per acre) due to heavy deer browse and canopy closure.
INSECTS / DISEASE:	None.
# TREES 6" – 13" / ACRE:	130.
# TREES > 14" / ACRE:	< 10.
SOILS:	Penn silt loam, Manassas silt loam.
TOPOGRAPHY:	Level.

ASPECT: Primarily north.

STAND HISTORY: Previously used for agriculture and grazing.

Cover Type # 5

GENERAL DESCRIPTION: Old field seeded in with eastern redcedar and Virginia pine.

SPECIES COMPOSITION: Overstory contains eastern redcedar and Virginia pine as well as other, more widely, interspersed early successional pioneer tree species such as red maple and black cherry. Eastern redcedar and red maple can also be found in the understory along with white ash to a lesser degree. There are patches of Japanese honeysuckle, wild rose, and blackberry *(Rubus ursinus)* present throughout the understory.

ACREAGE: 29.73 acres.

AGE/SIZE CLASS: Even-aged, immature (4"-6" DBH).

AGE: 8-15 years.

DENSITY: Medium stocking (250 stems per acre).

GROWTH RATE: Moderate.

QUALITY: Poor-fair.

REGENERATION: Desirable hardwood overstory species regeneration is very sparse due to heavy deer browse and competition from less desirable vegetation and heavy groundcover.

INSECTS / DISEASE: None.

TREES 6" – 13" / ACRE: 110.

TREES > 14" / ACRE: None.

SOILS: Penn silt loam, Manassas silt loam, Oatlands gravelly silt loam, Kelly-Sycoline complex, Albano silt loam.

TOPOGRAPHY: Level to gently rolling.

ASPECT: Aspect varies across this Cover Type.

STAND HISTORY: Previously used for agriculture and grazing.

Cover Type # 6

GENERAL DESCRIPTION: Larger hedgerows occurring primarily along fence lines and drainages. These areas have been highly disturbed from recent sod farming activities and other past agricultural activities.

SPECIES COMPOSITION: Overstory contains eastern redcedar, black cherry, red maple, white ash, and black locust *(Robinia pseudoacacia)*. There are patches of tree-of-heaven present along areas of high disturbance. The understory consists primarily of thick patches of Japanese honeysuckle, wild rose, blackberry, and poison ivy *(Toxicodendron radicans)*.

ACREAGE: 4.10 acres.

AGE/SIZE CLASS: Uneven-aged, immature to young mature (5"-12" DBH).

AGE: 15-45 years.

DENSITY: Poorly stocked (30 sq. ft. BA per acre).

GROWTH RATE: Moderate.

QUALITY: Poor.

REGENERATION: There is no desirable hardwood overstory species regeneration due to competition from less desirable vegetation and heavy ground cover.

INSECTS / DISEASE: None.

TREES 6" – 13" / ACRE: 30.

TREES > 14" / ACRE: <10.

SOILS: Kelly-Sycoline complex, Albano silt loam.

TOPOGRAPHY: Level.

ASPECT: Aspect varies across this cover type.

STAND HISTORY: Previously used for agriculture and grazing.

Cover Type # 7

GENERAL DESCRIPTION: Open area currently being used for sod production as well as abandoned field and lawn area around abandoned and current home sites. These open areas contain a few larger trees as well as scattered patches of early successional pioneer tree species. There are numerous smaller hedgerows traversing this area.

SPECIES COMPOSITION: Immature early successional pioneer tree species that can be found scattered throughout these open areas include red maple, eastern redcedar, black cherry and tree-of-heaven. Larger trees occurring within lawn areas around current and abandoned homesites include white oak, white pine *(Pinus strobus)*, pin oak, red maple, blue spruce *(Picea pungens)*, and black walnut *(Juglans nigra)*.

ACREAGE: 469.92 acres.

SOILS: Kelly-Sycoline complex, Sycoline-Catlett complex, Kelly silt loam, Manassas silt loam, Penn silt loam, Dulles silt loam, Panorama silt loam, Albano silt loam, Sudley-Oatlands complex, Nestoria gravelly silt loam, Haymarket and Jackland soils.

TOPOGRAPHY: Level to gently rolling.

ASPECT: Aspect varies across this Cover Type.

STAND HISTORY: Previously used for agriculture and grazing.

Forest Management Recommendations

Cover Type 1: This Cover Type is of high priority for forest management considerations relative to the other Cover Types due to the quality and size class of the trees it contains. Currently, the majority of overstory hardwoods within this stand fall within the small sawtimber size class. If the opportunity presents itself, portions of this Cover Type may be considered for preservation as Tree Conservation Area (TCA) during the development planning process.

Cover Type 2: This Cover Type is of medium priority for forest management considerations relative to the other Cover Types due to the quality and size class of the trees it contains. Currently, the majority of overstory hardwoods within this stand fall within the pulpwood to small sawtimber size class. If the opportunity presents itself, portions of this Cover Type may be considered for preservation as Tree Conservation Area (TCA) during the development planning process.

Cover Type 3: Forest management considerations are limited within this Cover Type due to its small size and the wet soil conditions present. This Cover Type would, however, be a high priority for preservation as it is currently serving as a riparian buffer area. Vegetated riparian buffers promote stream bank stability and filter run-off generated from agricultural and construction activities, thus increasing water quality. Furthermore these areas provide excellent wildlife habitat for a variety of native species. If the opportunity presents itself, portions of this Cover Type may be considered for preservation as Tree Conservation Area (TCA) during the development planning process.

Cover Type 4: This Cover Type is of low priority for forest management considerations due to the size and quality of the trees it contains. Virginia pine is not a desirable timber species and lacks structural integrity, thus it is prone to wind throw during windy and icy conditions. As the preservation of Virginia pine is not a priority, many of these trees may be removed. This will allow for the release of more desirable hardwood species such as oak and hickory. The removal of Virginia pine will also improve safety.

Cover Type 5: This Cover Type is of low priority for forest management considerations due to the small size of the trees it contains. There are, however, numerous saplings within this Cover Type that may be considered for transplanting for use within visual buffers or in landscaped settings based upon development design.

Cover Type 6: No forest management considerations. If the opportunity presents itself, some hedgerows may be preserved and incorporated into development design as screening buffers between landbays. If any hedgerows are to be preserved, invasive and noxious understory vegetation should be managed.

Cover Type 7: No forest management considerations.

General Recommendations

GUIDELINES FOR TREE CONSERVATION AREAS (TCA'S)

The following general guidelines should be implemented for all cover types throughout the development process and as part of the future maintenance of the TCA. These guidelines provide for the maintenance and overall health and sustainability of the TCAs.

1. Develop and implement a Tree Conservation Plan (TCP) for all areas to be preserved during site development. The TCP should start with the establishment of limits of clearing and grading. It should identify the location of fencing, (welded wire or super silt fence) to be used to protect these areas from encroachment during development and specify when they are to be installed and removed. It should identify the trees adjacent to these limits that may be affected by the development activity as specified in Chapter 7 of the Facility Standards Manual (FSM) and prescribe activities aimed at mitigating those affects, such as root pruning, mulching, fertilizing, etc.

2. Trees along the proposed limits of disturbance or in other areas of the TCA that pose potential hazard should be identified and removed during the development process.

3. Invasive species such as tree-of -heaven should be identified and treated during the development process and as part of the long-term management program. Control techniques may include mechanical removal, herbicide, or cultural control methods based on the species, severity of invasion, and location relative to sensitive plants or areas.

4. The site should be monitored throughout development and as part of the long-term management for outbreaks of potentially serious insects an disease including gypsy moth, canker worm, wood boring insects, and other potentially devastating outbreaks. Frequent monitoring that identifies populations at low levels can prevent the need for large scale treatments.

5. Any hazardous trees should be treated to improve safety in high use areas. These include home sites, recreation facilities and trails, or other areas frequented by people. This may include the removal, pruning, or cabling of trees with a high potential for failure.

6. Disturbed edges should be mulched to reduce the potential for invasion by undesirable species.

7. Thinning and removal of poor quality trees may be necessary to improve the overall health. This item should be a part of the long-term management for any Cover Type.

8. Pest monitoring and control is important to prevent secondary and tertiary stress factors.

FORESTRY BEST MANAGEMENT PRACTICES

All forest management activities shall comply with Virginia Best Management Practices (BMP's). BMP's are methods, measures, or practices to meet non-point pollution control needs. These practices include stabilization of all exposed soil on skid trails, haul roads, and log decks, crossing streams using bridges or culverts, locating trails and roads on minimal grades, installation of water diversion structures, and leaving buffer strips along perennial streams. All BMP's shall be done in accordance with those outlined by the Virginia Department of Forestry.

In addition to the state BMPs, the following guidelines shall apply to all forestry operations according to Loudoun County requirements where timber harvesting is implemented.

1. The Loudoun County Urban Forester shall be notified at least 24 hours prior to commencement of any timber harvesting.

2. The Loudoun County Urban Forester shall be notified upon installation of all BMP's.

3. Forest management activities shall comply with the Virginia Debris in Stream Law.

4. The property shall be protected from wildfire. Any outdoor burning shall be done carefully and in compliance with all Virginia Forest Laws. The Loudoun County Sheriff's Office shall be notified immediately of any escaped fire.

5. Locations of log decks, skid trails, and haul roads shall be identified prior to any logging activity.

6. A grading permit will be required for road construction exceeding 10,000 square feet.

7. Any forest management activities shall be done in accordance with accepted silvicultural practices and methods.

APPENDIX A—FOREST COVER TYPE SUMMARY TABLE

FOREST COVER TYPE SUMMARY TABLE							
Cover Type	Composition	Primary Species	Quality	Density	Age Class	Soils	Acres
1	UH	white oak, southern red oak, hickory, scarlet oak, white ash, Virginia pine	F-G	WS	M	63A, 62B, 79A, 69A, 76B, 76C, 70B, 73B, 77C3, 67B, 78A	131.54
2	MH	white oak, white ash, southern red oak, pin oak, hickory, red maple, black cherry	F	MS	YM-M	14B, 60C, 73B, 77C3, 79A	43.70
3	BH	red maple, American sycamore, yellow poplar, pin oak, green ash, southern red oak	F	MS	YM-M	6A, 79A, 77D3	13.75
4	P	Virginia pine, eastern redcedar	P	MS	YM	14B, 73B	39.50
5	OF	eastern redcedar, Virginia pine	P-F	MS	IM	14B, 73B, 76C, 62B, 79A	29.73
6	H	eastern redcedar, black cherry, red maple, white ash, black locust	P-F	PS	IM-YM	62B, 79A	4.10
7	OP/DEV	red maple, eastern redcedar, black cherry, tree-of-heaven	N/A	N/A	N/A	62B, 60C, 63A, 14B, 73B, 71B, 79A, 76B, 77C3, 67B, 73C	469.92
						Total acreage	732.24

APPENDIX B—CODE DESCRIPTIONS

SPECIES COMPOSITION:
UH—UPLAND HARDWOODS
MH—MIXED HARDWOODS
BH—BOTTOMLAND HARDWOODS
P—EARLY SUCCESSIONAL PIONEER VIRGINIA PINE AND EASTERN RED CEDAR
OF—OLD FIELD SEEDED IN WITH IMMATURE EARLY SUCCESSIONAL PIONEER SPECIES
H—HEDGEROW
OP/DEV—OPEN (PASTURE, FIELD, LAWN AREA, AND ANY EXISTING STRUCTURES)

QUALITY:
P—POOR
F—FAIR
G—GOOD

DENSITY:
REPRODUCTION TO IMMATURE STANDS:
PS—POORLY STOCKED (< 200 STEMS PER ACRE)
MS—MEDIUM STOCKED (200 – 500 STEMS PER ACRE)
WS—WELL STOCKED (> 500 – 700 STEMS PER ACRE)

YOUNG MATURE TO OVERMATURE STANDS
PS—POORLY STOCKED (< 50 SQ. FT. BA*)
MS—MEDIUM STOCKED (50 TO 70 SQ. FT. BA)
WS—WELL STOCKED (70 TO 100 SQ. FT. BA)
OS—OVER STOCKED (> 110 SQ. FT. BA)

AGE CLASS:
RE—REPRODUCTION (SEEDLINGS AND SAPLINGS < 2" DBH**)
IM—IMMATURE (SAPLING AND POLE-SIZE < 6" DBH)
YM—YOUNG MATURE (6 TO 12" DBH)
M—MATURE (> 12" DBH)
OM—OVERMATURE (LARGE TREES DOMINATE WITH EVIDENCE OF DECAY AND DEATH)

SOILS:
6A—BOMANSVILLE SILT LOAM, (0-3%) OCCASIONAL FLOODING
14B—MANASSAS SILT LOAM, (1-8%)
60C—SYCOLINE-CATLETT COMPLEX, (7-15%)
62B—KELLY-SYCOLINE COMPLEX, (3-8%)
63A—KELLY SILT LOAM, (0-3%)
67B—HAYMARKET AND JACKLAND SOILS, (8-15%)
69A—ELBERT SILTY CLAY LOAM, (0-3%) PONDING
70B—LEEDSVILLE COBBLY SILT LOAM, (3-8%)
71B—PANORAMA SILT LOAM, (3-8%)
73B—PENN SILT LOAM, (3-8%)
73C—PENN SILT LOAM, (8-15%)
76B—SUDLEY-OATLANDS COMPLEX, (3-8%)
76C—OATLANDS GRAVELLY SILT LOAM, (8-15%)
77C3—NESTORIA GRAVELLY SILT LOAM, SEVERELY ERODED (8-15%)
77D3—NESTORIA GRAVELLY SILT LOAM, SEVERELY ERODED (15-25%)
78A—DULLES SILT LOAM, (0-3%)
79A—ALBANO SILT LOAM, (0-3%) BRIEF PONDING

* BA = SQUARE FEET OF BASAL AREA PER ACRE
** DBH = DIAMETER MEASURED 4.5 FEET ABOVE GROUND

APPENDIX C—BIBLIOGRAPHY

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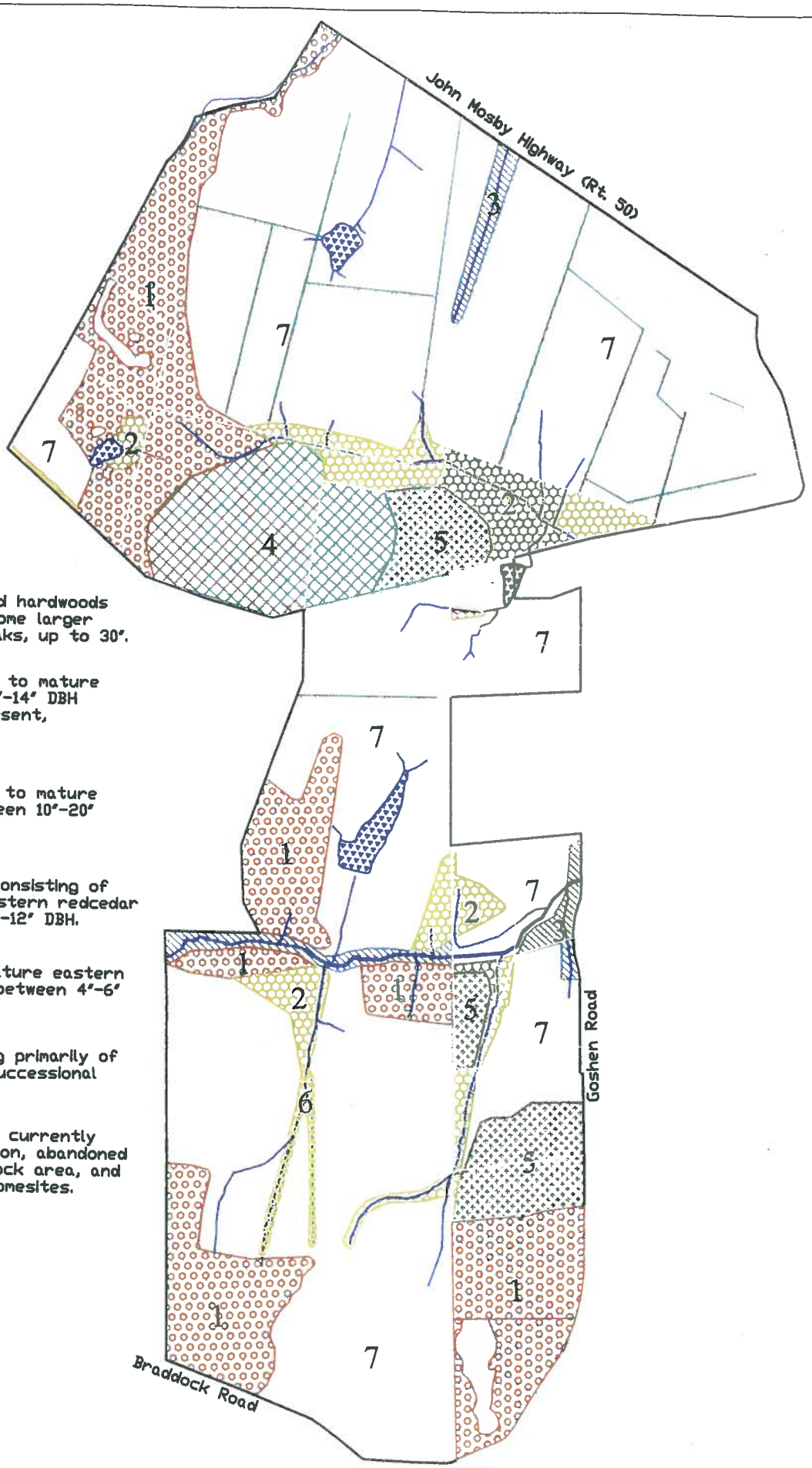

Cover Type 1
Uneven-aged, mature upland hardwoods between 10"-20" DBH with some larger trees present, primarily oaks, up to 30".

Cover Type 2
Uneven-aged, young mature to mature mixed hardwoods between 6"-14" DBH with some larger trees present, primarily oaks, up to 26".

Cover Type 3
Uneven-aged, young mature to mature bottomland hardwoods between 10"-20" DBH.

Cover Type 4
Early successional forest consisting of even-aged young mature eastern redcedar and Virginia pine between 6"-12" DBH.

Cover Type 5
Old field seeded in with immature eastern redcedar and Virginia pine between 4"-6" DBH.

Cover Type 6
Larger hedgerows consisting primarily of immature to mature early successional pioneer tree species.

Cover Type 7
Open area existing as fields currently being used for sod production, abandoned farmland, pasture and paddock area, and lawn area around existing homesites.

Hedgerow

Drainage

Pond

IMAGE NOT DRAWN TO SCALE

DATE: 02-15-05

DRAWN BY: JMM

FOREST COVER TYPE MAP

FOR

WESTPORT

LOUDOUN COUNTY, VIRGINIA

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